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R.T.

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/098,730 06/18/98 SUGIYAMA

T PM-254782

EXAMINER

IM22/0424

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ART UNIT

PAPER NUMBER

1743

DATE MAILED:

04/24/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/098,730

Applicant(s)

SUGIYAMA ETAL

Examiner

T. TUNG

Group Art Unit

1743

Paper No. 20

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 3-26-01
- ☒ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1, 2, 4, 6-8 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1, 2, 4, 6-8 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

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Claims 1, 2, 4, 6-8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The expression "boundary layer has an average sintered particle size....different from that of said insulating substrate layer" (last two lines of claim 1) does not appear to have basis in the original disclosure. The claim language now would include the scenario where the boundary layer has an average particle size smaller than that of the insulating substrate layer. Where is support for that in the original disclosure?

Claims 1, 2, 4, 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mase et al '456 in view of Suzuki et al.

Mase '456 discloses an alumina layer 54 directly sandwiched by a gastight insulating layer 50 and solid electrolyte layer 28, an alumina layer 34 directly sandwiched by electrolyte layers 28 and 8, and an alumina layer 20 directly sandwiched by electrolyte layers 8 and 10. The alumina layers are porous for the purpose of minimizing stress due to difference in coefficients of thermal expansion. Thus, the alumina layers correspond to applicant's "boundary layer". See col. 6, line 50 to col. 8, line 38. Applicant's claims differ by calling for the boundary layer to have an average particle size larger than that of the electrolyte layer and different from that of the insulating layer.

Suzuki discloses forming a more porous layer by starting with larger particles than a neighboring layer. See col. 2, lines 38-49. It would have been obvious for Mase to start with

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larger particles in the boundary layer in order to obtain a more porous layer in view of Suzuki, since the adoption of known features from analogous prior art in the absence of unexpected result is within the skill of the art. Also, this would make it unnecessary to resort to subsequent treatment for effecting the desired higher porosity in the boundary layer.

Applicant argues that larger sinter particle size does not necessarily mean higher porosity. Thus, it would not have been obvious to use larger particle size to achieve higher porosity. In support of his position, applicant submitted a publication of Sumitomo and a publication of Sumicorundum.

The Sumitomo publication shows samples AKP-20, AKP-30 and AKP-50 (apparently inadvertently labelled as 53 in the density/porosity graph) to clearly correspond with the notion that smaller particle size means lower porosity. The one sample (AKP-3000) that may not follow this trend has a particle size 0.55 very close to the 0.57 particle size of sample AKP-20. The resulting porosities of these two samples may be influenced by their difference in particle distribution. That particle distribution can influence porosity is suggested by the other publication Semicorundum (see the translation).

It is apparently applicant's position that because one single sample may run counter to the trend and that other factors (e.g. particle distribution) may override particle size, it is not predictable that larger particle size would mean higher porosity.

Applicant's arguments are totally non-persuasive. Suzuki unequivocally teaches that larger particle size results in higher porosity. Even the publications cited by applicant tend to

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show that much more than not larger particle size yields higher porosity, unless influenced by other factors. So, with the preponderance of evidence suggesting that the examiner's position that larger particle size would yield higher porosity to be correct, applicant's position appears to be that if there is one, single possible exception to this rule (applicant has not even proven one such exception), it would not have been obvious for Mase to adopt the teaching of Suzuki. In other words, one of ordinary skill in the art, armed with the teaching of Suzuki and the great majority of evidence in Sumimoto, would somehow not use particle size larger than those of the electrolyte and insulating layers in order to obtain a more porous layer. The other choices would be to use the same particle size and use smaller particle size. Knowing that Suzuki teaches the contrary and Sumimoto overwhelmingly suggests the contrary, why would one of ordinary skill in the art take those routes, when such routes defy logic?

It should also be pointed out that while particle distribution may affect porosity, there is no reason or basis to assume any difference in particle distribution among the boundary layer, the electrolyte layer and the insulating layer. Applicant's claim language does not set forth any such difference.

Applicant also argues that the porous layer in question in Suzuki is an outer coating layer that has a different function than the boundary layer of Mase, which is an inner layer.

Suzuki is relied upon only for the teaching that larger particle size yields higher porosity. The particular function of the Suzuki layer in question is irrelevant to the issue at hand. There

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really can not be any question that Suzuki, also drawn to a solid electrolyte sensor, is analogous to the primary reference Mase. It is difficult to understand applicant's point in this regard.

This is a CPA of applicant's earlier Application of the same serial number. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

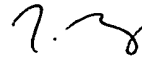
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The examiner can be reached at 703-308-3329. His supervisor Jill Warden can be reached at 703-308-4037. Any general inquiry should be directed to the receptionst at 703-308-0661. A fax number for TC 1700 is 703-305-3599.

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Ta Tung

Primary Examiner

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